

This listing of claims will replace all prior versions, and listings, of claims in the application:

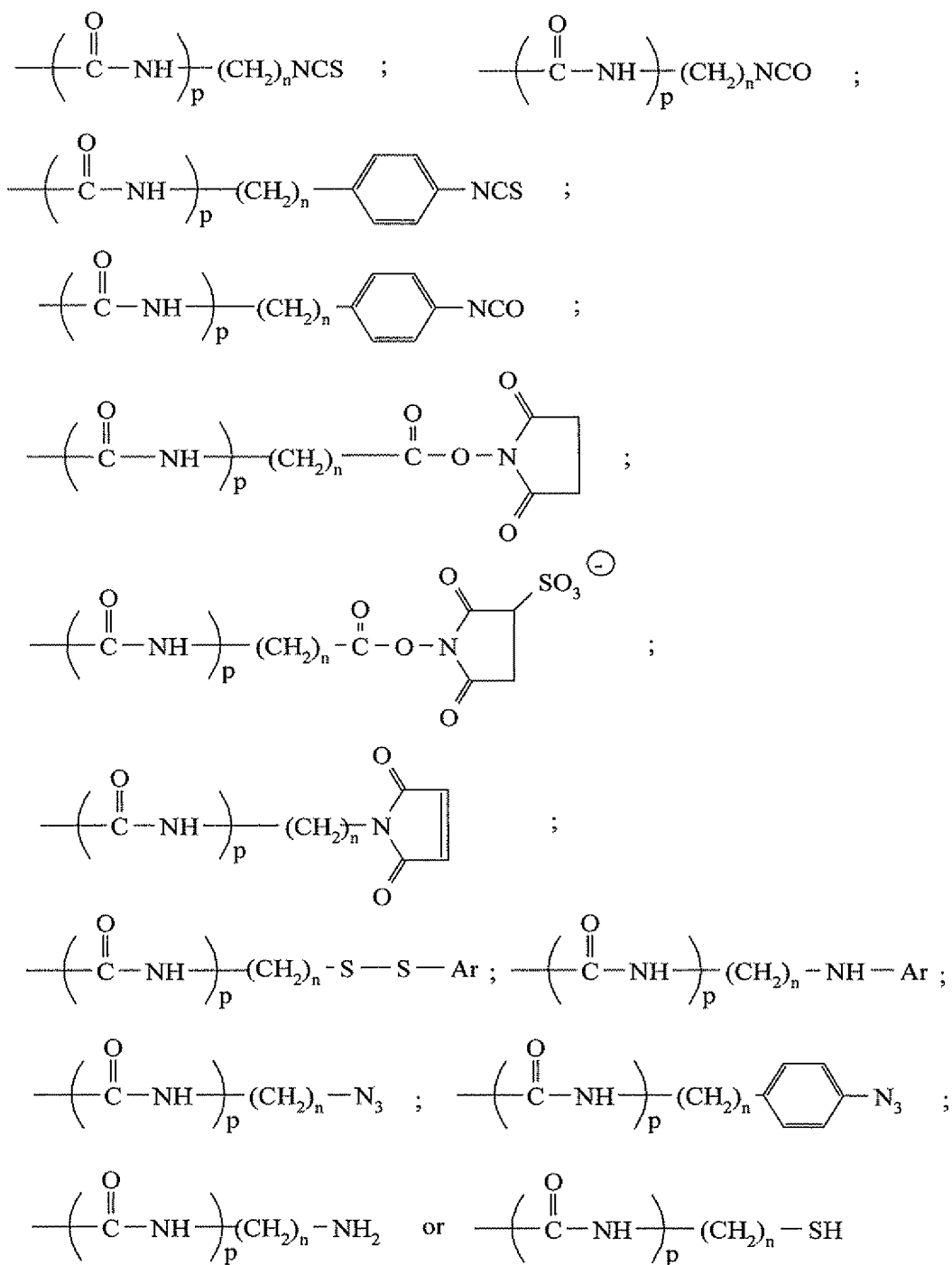
Listing of Claims:

1-41 (Cancelled)

42. (New) A fluorescent conjugate comprising:

- a fluorescent entity comprising a fluorophore, with the exception of a rare earth metal cryptate, covalently attached to one or more oligonucleotide(s) or oligonucleotide analog(s),
- a carrier molecule selected among an antibody, an antigen, an intracellular messenger, an intercellular messenger, a protein, a peptide, a hapten, a lectin, biotin, avidin, streptavidin, a toxin, a carbohydrate, an oligosaccharide, a polysaccharide, a nucleic acid, a hormone, a vitamin, a medicinal product;

said entity being covalently attached to said carrier molecule by means of at least one functional group on the fluorophore or one of the oligonucleotides or oligonucleotide analogs, said functional group being chosen from the groups: maleimide, carboxylic acid, haloacetamide, alkyl halide, azido, hydrazido, aldehyde, ketone, amino, sulfhydryl, isothiocyanate, isocyanate, monochlorotriazine, dichlorotriazine, aziridine, sulfonyl halide, acid halide, hydroxysuccinimide ester, hydroxysulfosuccinimide ester, imido ester, hydrazide, azidonitrophenyl, azidophenyl, azide, 3-(2-pyridyldithio)propionamide glyoxal, and groups of the following formulae:



where n is in the range of from 0 to 8 and p is equal to 0 or 1, and Ar is a 5- or 6-membered heterocycle comprising 1 to 3 hetero atoms, optionally substituted with a halogen atom.

43. (New) The conjugate as claimed in claim 42, characterized in that the oligonucleotide or the oligonucleotide analog comprises 2 to 60 nucleotide units.

44. (New) The conjugate as claimed in claim 42, characterized in that the functional group is attached to said entity via a spacer arm.

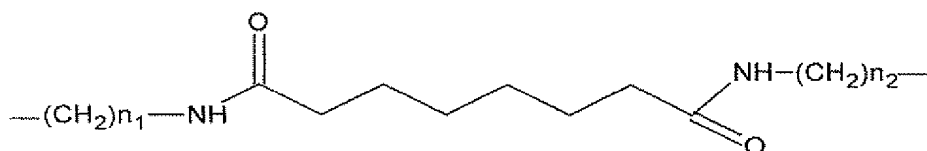
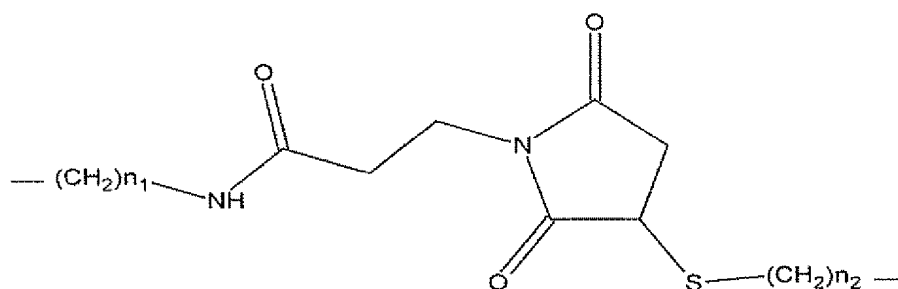
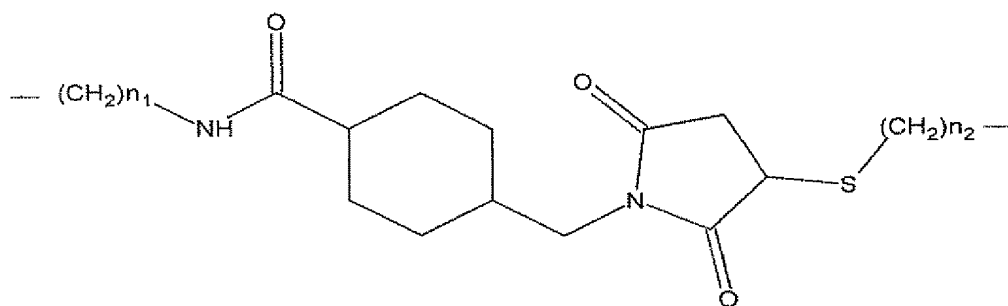
45. (New) The conjugate as claimed in claim 42, characterized in that the fluorophore comprises one or more aromatic rings and has a molecular extinction coefficient greater than 20 000.

46. (New) The conjugate as claimed in claim 42, characterized in that the fluorophore is chosen from rhodamines, cyanins, squaraines, bodipys®, fluoresceines and their derivatives.

47. (New) The conjugate as claimed in claim 42, characterized in that the fluorophore of the fluorescent entity is covalently attached to the oligonucleotide either directly or via a spacer arm.

48. The conjugate as claimed in claim 47, characterized in that the fluorophore is attached to the oligonucleotide via a spacer arm consisting of a divalent organic radical chosen from linear or branched C₁-C₂₀ alkylene groups optionally containing one or more double bonds or triple bonds and/or optionally containing one or more hetero atoms, such as oxygen, nitrogen, sulfur, phosphorus, or one or more carbamoyl or carboxamido group(s); C₅-C₈ cycloalkylene groups and C₆-C₁₄ arylene groups, said alkylene, cycloalkylene or arylene groups optionally being substituted with alkyl, aryl or sulfonate groups.

49. The conjugate as claimed in claim 48, characterized in that the spacer arm is chosen from the groups:



in which n_1 and n_2 are in the range of 2 to 6.

50. (New) The conjugate as claimed in claim 42, characterized in that the oligonucleotide comprises 5 to 60 nucleotide units.

51. (New) The conjugate as claimed in claim 50, characterized in that the oligonucleotide comprises a series of ribonucleotide or deoxyribonucleotide units attached to one another via bonds of the phosphodiester type.

52. (New) The conjugate as claimed in claim 50, characterized in that the oligonucleotide comprises a series of ribonucleotide or deoxyribonucleotide units or of nucleotide analog units modified on the sugar or on the base, attached to one another by natural internucleotide phosphodiester bonds, some of the internucleotide bonds being optionally replaced with phosphonate, phosphoramidate or phosphorothioate bonds.

53. (New) The conjugate as claimed in claim 50, characterized in that the oligonucleotide comprises a series comprising both ribonucleotide or deoxyribonucleotide units attached to one another by phosphodiester bonds and nucleoside analog units attached to one another by amide bonds.

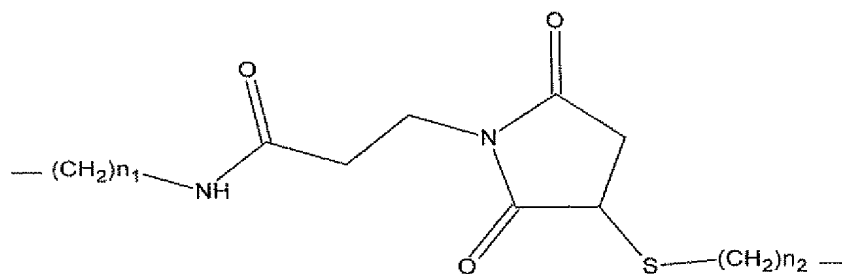
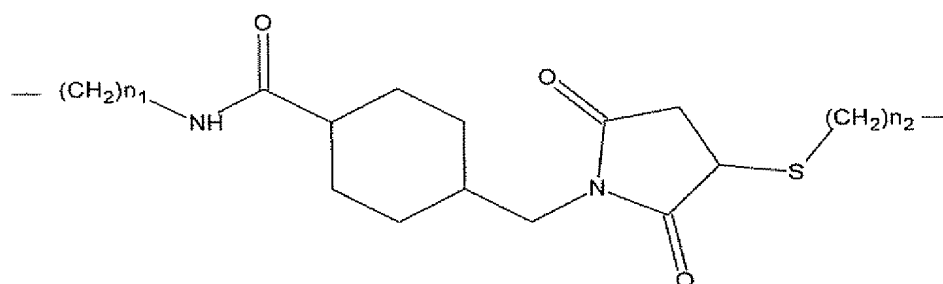
54. (New) The conjugate as claimed in claim 50, characterized in that the oligonucleotide comprises a series of ribonucleotide or deoxyribonucleotide units attached to one another by phosphodiester bonds and of nucleoside analog units attached to one another by amide bonds, said oligonucleotide comprising at least 5 internucleotide bonds of the phosphodiester type at the end intended to be attached to the fluorophore.

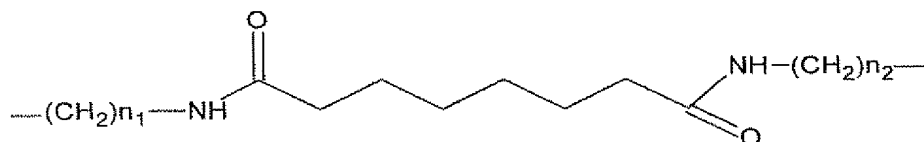
55. (New) The conjugate as claimed in claim 42, characterized in that the functional group is an amine function of a nucleotide unit of the oligonucleotide or of the oligonucleotide analog, or results from the reaction of a free amine function of a nucleotide unit of the oligonucleotide or the oligonucleotide analog, with a group chosen from the groups: ester, carboxylic acid, isothiocyanate, aldehyde, carbonyl, sulfonyl halide, alkyl halide, azide, hydrazide, dichlorotriazine, anhydride, haloacetamide, maleimide and sulfhydryl.

56. (New) The conjugate as claimed in claim 42, characterized in that the functional group results from the reaction of a free amine function of a nucleotide unit of the oligonucleotide or of the oligonucleotide analog, with an N-hydroxysuccinimidyl ester.

57. (New) The conjugate as claimed in claims 42, characterized in that the functional group(s) is (are) attached to the fluorophore and/or to the oligonucleotide by a spacer arm consisting of a divalent organic radical, chosen from linear or branched C_1 - C_{20} alkylene groups optionally containing one or more double bonds or triple bonds and/or optionally containing one or more hetero atoms, such as oxygen, nitrogen, sulfur, phosphorus, or one or more carbamoyl or carboxamido group(s); C_5 - C_8 cycloalkylene groups and C_6 - C_{14} arylene groups, said alkylene, cycloalkylene or arylene groups being optionally substituted with alkyl, aryl or sulfonate groups.

58. (New) The conjugate as claimed in claim 57, characterized in that the spacer arm is chosen from the groups:





in which n_1 and n_2 are in the range of 2 to 6.

59. (New) The conjugate as claimed in claim 42, characterized in that the final molar ratio defined as the number of moles of fluorescent entity per carrier molecule is greater than 0 and less than 100.

60. (New) The conjugate as claimed in claim 42, characterized in that the carrier molecule is an antibody or streptavidin.

61. (New) The conjugate as claimed in claim 42, characterized in that the fluorophore of the fluorescent entity is cyanin-5, the oligonucleotide of said entity has the sequence A_{15} and the carrier molecule is cAMP.

62. (New) The conjugate of claim 45 wherein the fluorophore has a molecular extinction greater than 50,000.

63. (New) The conjugate of claim 50, wherein the oligonucleotide comprises 5-15 nucleotide units.

64. (New) The conjugate of claim 59, wherein the molar ratio is greater than zero and less than 20.